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Amyand's hernia with appendicitis in the children: A delayed diagnosis

Asma Jabloun*, Habib Bouthour, Samer Bustame, Fatma Trabelsi, Rabiaa Ben Abdallah, Najib Kaabar

Department of Pediatric Surgery, Habib Thamer's Hospital of Tunis, Tunisia

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ABSTRACT

The presence of a vermiform appendix in an inguinal hernia sac is known as Amyand's hernia. It is an uncommon and rare condition estimated to be found in approximately 1 % of hernia. However, in just 0.08 %, the condition is complicated by an acute appendicitis. The clinical presentation varies, depending on the extent of inflammation of the appendix, and is most often misdiagnosed as an incarcerated inguinal hernia. As such, it is rarely recognized prior to surgical exploration. We report a case of Amyand's hernia in a 2-month-old male, who presented as a right-sided congenital hernia with pain in the right groin. He underwent herniotomy, which revealed that the hernia sac containing elongated inflamed appendix appeared with some adhesions to sac, lying in the inguinal canal.

The presence of the vermiform appendix within an inguinal hernia was first described by Claudius Amyand in 1735 [1], where he performed an appendectomy on an eleven-year old boy with a perforated appendix inside an inguinal incarcerated sac [1,2]. In the literature, case reports indicate that 1% of the inguinal hernias contain a portion of the vermiform appendix with associated acute appendicitis in 0.08% of cases [2,3].

We report a case of Amyand's hernia occurring in a 2-month-old male, who presented with tender right inguinal swelling.

1. Case report

A 2-month-old male presented with a history of reducible right inguino-scrotal swelling since birth, which had become irreducible for 2 days prior to presentation. It was associated with non-bilious vomiting and fever.

On examination, the child was irritable and local examination revealed irreducible swelling in the right inguino-scrotal region with redness and a nonpalpable-right testis due to local edema (Fig. 1). No abnormalities were noted on labwork or abdominal X-ray. The patient was taken to the operating room for a presumed incarcerated inguinal hernia.

At surgery, an inflammatory and edematous mass was found inside the inguinal canal. This mass was identified the tip, body of the appendix, and cecum were adhered to the hernia sac. The appendix was perforated at the proximal third portion with an inflamed distal portion (Fig. 2). A small amount of clear fluid was noted in the peritoneum. The base of the appendix and cecum were healthy and the right testis was viable. An appendectomy was performed and a Bassini repair was done. The patient was given a 3-day course of cefoxitin 80 mg/kg/day. The postoperative course

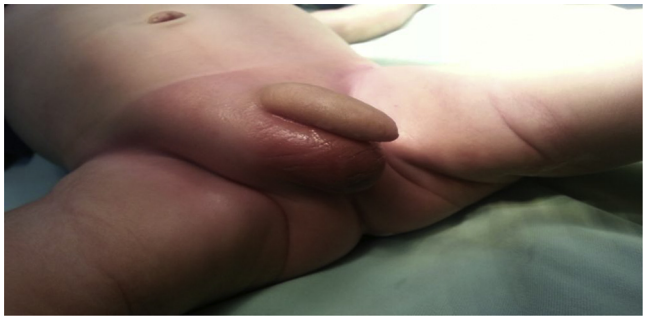

Fig. 1. Erythematous and non reducible mass in right inguinal reason.

* Corresponding author. Asma Jabloun, Habib Thamer's hospital of Tunis, Department of Pediatric Surgery, Hôpital Habib Thameur, 8 Rue Ali Ben Ayed Tunis Montfleury, Tunis 1008, Tunisia.
E-mail address: asmajabloun@yahoo.fr (A. Jabloun).

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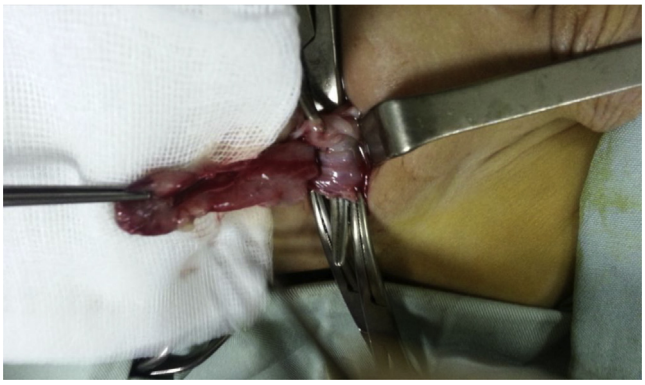

Fig. 2. Hernia sac with appendicitis.

was uneventful and the patient was discharged home within 5 days. No complications were noted at follow up.

2. Discussion

The presence of an appendix in the inguinal hernia sac is a rare finding, with an incidence of approximately 1%. Acute appendicitis within an inguinal hernia is even more uncommon with a frequency of 0.08–0.13%. An accurate incidence cannot be estimated because few cases have been reported in the literature [1–3].

The pathophysiology of Amyand's hernia and its relationship with appendicitis are unknown. Some authors consider it an accidental finding; for others, a decrease in vascularization during incarceration and the maneuver to reduce the hernia result in the inflammation of the appendix [4]. In this case, the appendix likely became incarcerated with subsequent edema and local inflammation that then compromised vascularization of the appendix leading to inflammation and perforation. The presence of an abscess localized to the hernia sac reinforces this aspect.

As clinical presentation is variable, depending on the level of inflammation and presence of perforation, a definitive diagnosis is often made at the time of surgery. Infants under one year of age, who present with recurrent painful swelling of the inguinal region an Amyand hernia should be included in the differential [5,6].

There is no consensus to surgical correction as the inflammatory status of the vermiform appendix determines the approach and the type of hernia repair. In the presence of an appendicitis, treatment involves an emergency appendectomy and repair of the hernia [7].

In the case of a normal appendix, incidentally found within the hernia sac, the performance of a prophylactic appendectomy along with the hernia repair is not favored [8,9]. Sharma et al. [9] suggest that appendectomy adds the risk of infection to an otherwise clean procedure. Superficial wound infection increases morbidity, and deep infection may contribute to hernia recurrence. In addition, surgical manipulation to achieve visualization of the entire appendix and its base, by enlarging the hernial defect or distending the neck of the hernial sac, increases the possibility of recurrence by weakening the anatomic structures around the defect [8,9]. Salemis et al. [10] recommend reduction of the appendix and mesh hernioplasty if there is no acute appendicitis, if an inflamed appendix is found a lower midline inferior laparotomy through which a safe appendectomy and a thorough exploration of the right iliac fossa can be performed.

Table 1
Pathological types of Amyand's hernia and their respective management [1].

	Definition	Surgical management
Type 1	Normal appendix	Reduction, mesh hernioplasty
Type 2	Acute appendicitis: No abdominal sepsis	Appendectomy through the hernia, hernioplasty with native tissues, no mesh
Type 3	Acute appendicitis: Abdominal sepsis present	Appendectomy through laparatomy, hernioplasty with native tissues, no mesh
Type 4	Acute appendicitis within inguinal hernia: Other abdominal pathology related or unrelated	Manage as with types 1 to 3 hernia investigate or treat second pathology as appropriate

Although these general rules are certainly acceptable, there are more clinical scenarios to keep in mind. Losanoff and Basson [1] have distinguished four basic types of Amyand's hernias, with recommended treatment strategies (see Table 1 for classification).

3. Conclusions

The true prevalence of Amyand's hernia appears lower than classically described. Its clinical image is similar to that of an incarcerated hernia, and thus it is almost impossible to diagnose preoperatively, although ultrasound and computed tomography can help. Treatment includes hernioplasty with or without appendectomy depending on the level of inflammation and the patient's general condition. Amyand's hernia generally has a favorable prognosis, although serious complications have been described. Surgeons should be prepared if they encounter an Amyand's hernia because appropriate treatment ensures hernia repair without complications and with avoidance of recurrence.

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